International Carbon Action Partnership

China - Shenzhen pilot ETS

General Information

ETS Description

The Shenzhen Pilot ETS began in June 2013 and was the first of the Chinese pilots to start. As a city within Guangdong province with its own separate ETS, Shenzhen is the only Chinese pilot operating at the sub-provincial level. Covered entities must surrender allowances for all their covered emissions, and allocation is based predominantly on free allocation.

The Shenzhen ETS covers emissions from over 700 entities in the industry, buildings, waste and transport sectors. Except for two auctions held in 2014 and 2022, allowances have been allocated freely using both benchmarking and grandparenting. In addition to the national offset program, Chinese Certified Emission Reduction (CCER), the Shenzhen ETS also accepts credits from local offset programs, including the carbon inclusive system.

Shenzhen's market has the highest liquidity in China, despite its relatively small size. In contrast to most pilot systems in China, which are regulated by sub-national government orders from the executive body of the government, Shenzhen's is regulated by a dedicated ETS bill passed by its municipal legislator, the Shenzhen People's Congress. According to the "Implementation Plan of Shenzhen Emissions Trading to Support Peaking Carbon Emissions and Achieving Carbon Neutrality", the Shenzhen ETS will apply an absolute cap from 2027.

The Shenzhen ETS currently operates in parallel with China's National Carbon Market. As the National Carbon Market expands, covered entities in these sectors are being integrated into the national system.

ETS Status

in force

Jurisdictions

Shenzhen

Year in Review

In January 2025, the Shenzhen Environment and Ecology Bureau (EEB) announced that all covered entities had surrendered their compliance units for compliance year 2023.

In March, the EEB updated its covered entity list for compliance year 2024, By the end of December, removing 83 entities and adding 44 new entrants. The Shenzhen ETS now covers 672 entities.

From May to October, the Shenzhen EEB published four trial methodologies for Tan Pu Hui local offset credits in Shenzhen (STTCERs), covering distributed photovoltaic, paperless finance, second-hand electronic products and carpooling. These initiatives aim to promote low-carbon production and lifestyles, and to further develop the Shenzhen Carbon Inclusive system.

The 2024 allocation plan was published in August 2024, while the plan for 2025 has not yet been released. Since the newly integrated sectors into the National Carbon Market, namely cement, steel and aluminum smelting sectors, are not prominent in Shenzhen, the changes induced in the Shenzhen ETS are less significant than other pilots.

Sectoral coverage

Waste
Transport
Buildings
Industry

Revenue usage

General budget, including debt reduction
Climate mitigation

Emissions & Targets

Overall GHG Emissions excl. LULUCF (MtCO2e)

45.42 $MtCO_2e$(2020)*

* No data is publicly available for recent years; the data here is estimated by local experts.

GHG reduction targets

By 2030: Peak carbon emissions (Outline of the 14th Five-Year Plan and 2035 Vision)

By 2035: Decouple GHG emissions from economic and social development (Shenzhen's 14th Five-Year Plan for Climate Change)

Current Allowance Price (per t/CO2e)

Average secondary market price: CNY 44.98 (USD 6.26)

Size & Phases

Covered emissions (2020)

50.00%

GHGs covered

CO2 only

Phases

Ongoing

Cap or total emissions limit

The total emission limit under the Shenzhen ETS changes as a function of production (output) and is the sum of the bottom-up output-based/installation-level emissions limits for all individual covered entities. The bottom-up emissions limits do not represent an absolute cap.

2015 to 2019: ~31 $MtCO_2$ (excluding buildings)

2020: 22 $MtCO_2$

2021: 25 $MtCO_2$

2022: 26 $MtCO_2$

2023: 28 $MtCO_2$

2024: 33.5 $MtCO_2$

In addition, the government sets aside reserves for new entrants (2%) and market stability measures (2%).

Sectors and thresholds

Water, gas, heat, manufacturing, electronic equipment, waste management, ports, subways, public buses, and other non-transport sectors. Electricity production was covered until 2019, after which it transitioned to the National Carbon Market.

Data centers, solid waste, accommodation and catering, wholesale and retail, warehousing and postal services, software and information services, and government agencies and public institutions are newly covered in 2024.

INCLUSION THRESHOLDS: Annual emissions in excess of 3,000 tCO_2 for enterprises; entities confirmed by local EEB.

Point of regulation

Point source (industry); downstream (indirect emissions from electricity and heat consumption).

Type of entities

Companies

Number of entities

672 (2024)

Allowance Allocation & Revenue

Allowance allocation

Allowances are largely distributed for free, and allocation is adjusted ex-post based on output data. The allocation plan is updated every year. For the compliance year 2024:

FREE ALLOCATION:

Benchmarking: Applied to the water, power grid, gas, and data centre sectors, based on sectoral historical emissions intensity.

Grandparenting: Applied to waste management facilities, ports, subways, public buses, and some specific chemical production based on a product-based historical emissions intensity method. A GDP-based historical emissions intensity method is applied to manufacturers. For public buildings such as accommodation and catering, wholesale and retail, warehousing and postal services, software and information services, government agencies and public institutions, and universities, grandparenting based on historical emissions is applied.

Ex-post allocation adjustments, e.g., based on production data, are applied for those with historical intensity or benchmarking allocations. For the compliance year 2024, Shenzhen EEB calculated the allowances based on the expected output in 2024. 70% of the expected amount was allocated for free as pre-allocated allowance. Before the compliance deadline in 2025, the competent authority will supplement or deduct the allowance based on the verified output in 2024.

AUCTIONING: The 2022 “Provisional Regulation of the Shenzhen Emission Trading Pilot Scheme” states that allowances can be sold at auction or at a fixed price. At least 3% of allowances should be auctioned. So far, two auctions have been held, in June 2014 and August 2022/

Total Revenue

~CNY 27.92 million (USD 3.9 million) since the beginning of the program

Use of Revenues

According to the 2014 Shenzhen ETS regulation, auctioning revenues are attributed to the city treasury.* However, the 2022 revision states that the city will enhance the transparency of revenue use and establish a new Carbon Emissions Trading Fund to support the ETS and other GHG reduction programs.

* The 2014 Shenzhen ETS regulation stipulated that the city government would set up a market stability fund, dedicated to market stabilization measures, supporting companies' mitigation activities, the promotion of market service institutions, capacity building, and ETS management, funded by auction revenues, donations and other channels.

Flexibility & Linking

Offset credits

The use of offset credits is allowed.

QUANTITATIVE LIMIT: The use of offset credits is limited to 20% of the shortfall in compliance obligation.

QUALITATIVE LIMIT: Domestic project-based carbon offset credits (CCERs), Tan Pu Hui local offset credits, and other offset credits authorized by the local government are allowed. Credits from hydropower projects are not eligible, and additional geographical restrictions apply to the use of certain CCERs and local offset programs.

Starting from 2024, green power purchased and consumed through electricity market can also be used to offset emissions, with a limit on its use equal to the size of the shortage.

Banking and borrowing

Banking is allowed.

Borrowing is not allowed.

Links with other Systems

The Shenzhen Pilot ETS is not linked with any other system. The Guangdong-Hong Kong-Macao Greater Bay Area (to which Shenzhen belongs) plans to explore the feasibility of a joint or linked carbon market. According to Shenzhen's local green finance legislation, financial institutions will in the future be encouraged to participate in cross-border trading in this market.

Other carbon pricing instruments in the jurisdiction

ETS: Chinese national ETS

Domestic crediting mechanisms: Tan Pu Hui local offset credits in Shenzhen (STTCER)

Domestic crediting mechanisms (national): China Certified Emissions Reduction (CCER)

Compliance

Compliance mechanism

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions by the end of August of the year following the compliance year.

Compliance Period

One calendar year. Covered entities have until the end of August of the following year to surrender allowances.

Monitoring, Reporting, Verification (MRV)

FRAMEWORK: Shenzhen has released two documents setting the basis for MRV:

- a general guiding document in the form of regional standards on monitoring and reporting; and
- a guiding document on monitoring and reporting for the buildings sector.

MONITORING: Covered entities are required to set up and follow emissions monitoring plans.

REPORTING FREQUENCY: Annual reporting of CO_2 emissions to the ETS competent authority by the end of March of the following year, using tiered emissions factors depending on different emission sources. Covered industrial entities must also annually submit a statistical indicator report covering their production data to the municipality's statistics department by the end of March of the following year.

VERIFICATION: Third-party verification of the annual emissions report is required. The competent authority may assign this to a specialized agency.

Penalties and enforcement

REGULATED ENTITIES: Penalties for failing to submit an emissions or verification report on time or for providing fraudulent information range from CNY 10,000 (USD 1,391) to CNY 50,000 (USD 6,954).

Covered entities providing false information can be fined CNY 50,000 (USD 6,954) to CNY 100,000 (USD 13,909).

Penalties for disturbing the market order can rise to CNY 100,000 (USD 13,909). Covered entities failing to surrender sufficient allowances to match their emissions are fined three times the average market price of the preceding six months. The missing allowances can be withdrawn from the company's account or deducted from next year's allocation.

Other non-financial penalties include public reporting, reporting relevant credit information of public banks, disqualification from financial subsidies (for five years), and a record entered in the State-Owned Enterprise Performance Assessment System.

THIRD-PARTY VERIFIERS: Third-party verification agencies may be penalized with a fine of CNY 50,000 (USD 6,954) to CNY 100,000 (USD 13,894) for falsifying verification reports.

Third-party verifiers (experts) shall be penalized with a fine of between CNY 10,000 (USD 1,391) to CNY 50,000 (USD 6,954) for issuing false verification reports, material errors in verification reports, and for unauthorized use or publication of confidential corporate or emissions information.

Market Regulation

Market Stability Provisions

INTERVENTION

Instrument type: Price-based instrument

Functioning: In case of significant price rise or low liquidity, the Shenzhen EEB can auction extra allowances from the reserve at a fixed price; 2% of the total cap is kept as a government reserve for market stabilization.

Such allowances can be used only for compliance and cannot be traded. The situation of a significant price rise in allowance prices refers to when the closing price of allowances on a given day exceeds the highest daily closing price in the national or pilot carbon market over the preceding 12 months. Additionally, this situation occurs when the average allowance price over six months reaches or exceeds three times the average allowance price over the past 24 months, or when the average allowance price over a week reaches or exceeds three times the lowest weekly average price over the preceding 24 weeks.

The situation of excessively low quantities of allowances in circulation occurs when, following the completion of the previous year's compliance work, there are fewer allowances in circulation than 20% of the total annual quantity of allowances for the current year.

EXCHANGE

Instrument type: Price-based instrument

Functioning: The China Emissions Exchange (Shenzhen) implements a system of limits on price increases and decreases for trading over the exchange. For listed trading (with maximum trading volume of 30,000 tCO_2), this is 10% above or below the reference price (the weighted average price of all transactions on the previous trading day). For block trading (with minimum trading volume of 10,000 tCO_2), this is 30% above or below the reference price. Only transactions within this price range can be successfully completed on the exchange.

Market Design

MARKET PARTICIPATION: Compliance entities; non-compliance entities (institutional investors); individuals (both domestic and international), subject to meeting the requirements of the carbon emission trading rules set by the China Emissions Exchange (Shenzhen).

MARKET TYPES:

Primary: Shenzhen so far has very limited experience with auctioning: two auctions have been held, in 2014 and 2022. Only compliance entities and member institutions authorized by the China Emissions Exchange (Shenzhen) may participate.

Secondary: CCERs, Shenzhen Allowances (SZAs), and local Tan Pu Hui offset credits are the main spot trading products in the secondary market. The China Emissions Exchange (Shenzhen) is the trading platform for all products.

Due to financial market regulations in China, no forward markets or derivatives are allowed.

LEGAL STATUS OF ALLOWANCES: Allowances are not considered financial instruments.

Other Information

Institutions involved

Ecology Environment Bureau of Shenzhen Municipality (EEB): Responsible for ETS affairs, including the registry and MRV.

China Emissions Exchange (Shenzhen): Responsible for operating the trading platform.

Regulatory Framework

Carbon Emissions Management Regulations of Shenzhen Special Economic Zone (the local ETS bill) (2012)

Measures for Management of Emissions Trading in Shenzhen (2024)

Implementation Plan of Shenzhen Emissions Trading to Support Peaking Carbon Emissions and Achieving Carbon Neutrality

Shenzhen EEB—Regulations on Tan Pu Hui Management

Shenzhen EEB—Allocation Plan for Vintage 2024

Shenzhen EEB – list of covered entities 2024

Evaluation / ETS review

No formal evaluation has been conducted. Research on improving the Shenzhen ETS is undertaken every year, funded by the Shenzhen government.

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